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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,055	09/08/2003	Kevin R. Curtis	495812004700	5511

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EXAMINER

CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 05/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/658,055	CURTIS ET AL.	
	Examiner	Art Unit	
	Audrey Y. Chang	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-120 is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,7,8,10,11,15,16,22-24,26,28,30,35,40,42-44,46 and 53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/30/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims withdrawn from consideration are 5,6,9,12-14,17-21,25,27,29,31-34,36-39,41,45,47-52 and 54-120.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I species 6 in the reply filed on March 3, 2005 is acknowledged.
2. Applicant indicates that claims 1-11, 15-24, 26, 28-40 and 42-60 read on the elected group and species. However upon further review the restriction requirement, only claims 1-4, 7-8, 10-11, 15-16, 22-24, 26, 28, 30, 35, 40, 42-44, 46 and 53 read on the elected group and species. These claims therefore will be examined.
3. Claims 5-6, 9, 12-14, 17-21, 25, 27, 29, 31-34, 36-39, 41, 45, 47-52 and 54-120 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group and species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on March 3, 2005.

Claim Objections

4. Claims 1-4, 7-8, 10-11, 15-16, 22-23, 28, 30, 35, 40, 42-44, and 53 are objected to because of the following informalities:

(1). The phrase "recording holographic storage media" recited in claims 1, 30 and 43 is confusing and wrong. It is not the "storage media" that is being recorded but *holograms* being recorded in the storage media. It is also noted that it is the "*interference*" between the resulting modulated beam and the reference beam that is being recorded in the medium not just the modulated beam.

(2). The phrase "the recorded data pages spatially overlapped" recited in claim 3 is somehow in contradiction with respect to its based claim, which states that multiple data pages are recorded "parallel" in the holographic storage medium. If the data pages are recorded "parallel" with respect to each other then they cannot be all spatially overlapping. Clarification and corrections are required.

(3). The phrase “the information layer is propagated to the holographic storage medium” recited in claim 4 is wrong and confusing, since it is not clear how could an information layer, which is a *physical data medium* that is possible be “propagated”. Only *light* can be propagated. This phrase perhaps is better being stated as “the *modulated beam* bearing the information in the data mask is propagated”.

(7). It is not clear why would the “data mask” has an “image plane”, as recited in claim 7. Does the data mask have optical power that would form image?

(8). The phrase “the data mask is propagated to the holographic recording medium” recited in claim 8 is wrong; the data mask which is a physical means *cannot be propagated* to the recording medium.

(9). The phrase “holographic storage medium with a plurality of previous recorded information layers” recited in claim 16 contradicts to its based claim which states that there is just one information layer, not multiple layers.

(10). The phrase “read only memory” recited in claims 22 and 46 is confusing since the based claim explicitly claims a “recording process” for the holographic storage medium, and it is hardly “read only”.

(11). The phrase “the data mask includes multiple information layers” recited in claim 28 is confusing and in contradiction to its based claim which states only one single information layer is in the data mask. Please clarify the structural and logical relationships between the “information layer” in claim 24 and the “multiple information layers” in claim 28 to make the scopes of the claim clear.

(12). Claim 30 is incomplete since simply having a light source and a data mask will not be able to record information in the holographic storage media. A *reference light* is *essential* for creating *interference* between the object beam bearing the information in the data mask and the reference beam to record holograms in the holographic storage medium.

Art Unit: 2872

(13). The phrase “an optical element” recited in claim 35 is confusing and indefinite since it is not clear what is this optical element and how does it structurally related to other elements in the system.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 1, 4, 7, 8, 10, 11, 23, 24, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Lesh (PN. 4,677,62).**

Lesh teaches a method and a system for recording holograms in a holographic storage medium that is comprised of the step of illuminating a *photolithography mask* (24) serves as the *data mask* with a light beam and recoding an interference between a resulting modulated beam, (from the data mask), and a *reference* beam in a holographic emulsion plate (14), serves as the *holographic storage medium*, (please see Figure 3). Lesh teaches that the photolithography mask has an *information layer* that is divided up into a *plurality of data pages*, (each “holes” on the mask serves as a data page), and these data pages are recorded *parallel* in the holographic recording medium.

With regard claim 4, it is implicitly true that the resulting modulated beam with the information in the information layer can be propagated to plane outside the holographic recording medium. With regard to claim 8, such propagation is done without a lens, (please see Figure 3).

With regard to claim 7, the holographic recording medium has to be close to the image plane of the mask for making he recording possible.

Art Unit: 2872

With regard claims 10-11 and 23, the holographic recording medium (14) is a *rectangular* card and implicitly is a disc.

With regard to claim 24, the photolithography disk (24) serves as the *data mask* with an information layer having a plurality of data pages, as described above.

With regard to claim 30, Lesh teaches the holographic recording system having a **light source** (16, Figure 3) and a photolithograph mask (24) having a plurality of data pages serves as the data mask for relaying an information layer to a holographic recording medium.

This reference has therefore anticipated the claims.

7. **Claims 43 and 53 are rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Hart (PN.5,592,313).**

Hart teaches a method for recording hologram on a holographic storage medium that is comprised of the *step of illuminating a master hologram* (H1, Figure 9), serves as the *holographic master data mask* to reconstruct a stored information layer onto a *holographic storage medium*, (H2) with an *object beam* (806) wherein the master hologram (H1) includes a *holographic storage material*. The method further comprises the step of propagating a *reference beam* (852) to the holographic storage medium (H2) to record an interference pattern between the reference beam and the information bearing object beam, which therefore record a hologram containing the information layer, (please see Figure 9 and column 24). With regard to claim 53, a holographic recorded medium (H2) is created by the recording method.

This reference has therefore anticipated the claim.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claim 2, 3, 22, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Lesh.**

The holographic recording method and system taught by Lesh as described for claims 1 and 30 above has met all the limitations of the claims.

With regard to claim 2, this reference does not teach explicitly that the recorded data pages are separated by 1 micron to 10 mm. However this feature is either inherently met by the disclosure of Lesh or an obvious modification to one skilled in the art to design the recorded holograms be arranged with a desired separation for the benefit of making recorded holograms not interfering with each other.

With regard to claim 3, this reference does not teach explicitly that the recorded data pages spatially overlapped. However this feature is objected for the reasons stated above for it is impossible for all the recorded data page be overlapped yet they are recorded in parallel fashion as required in claim 1. However it is possible to form the data pages on the data mask to make the recorded data pages closely packed so that some may overlap with each other to form more closely packed holograms to make the replayed hologram with desired close packed pattern.

With regard to claim 22, the feature concerning "read only" holographic storage medium is confusing since the medium is used explicitly for recording hologram. This feature therefore cannot be really examined.

With regard to claim 35, it is implicitly true or an obvious modification to one skilled in the art to include reposition means to position the data mask, the holographic recording medium or optical element such as the beam splitter or mirror in the holographic recoding system to make them in correct alignment with each other to ensure the proper recoding geometry for the benefit of avoiding noise being recorded.

10. Claims 15-16, 26, 28, 40, 42, 43-44, 46 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Lesh in view of the patent issued to Anderson et al (PN. 3,653,067).

The method and system for recording holograms in a holographic storage medium that is comprised of the step of illuminating a photolithography mask, (24) serves as the *data mask* with a light beam and recoding an interference between a resulting modulated beam, (from the data mask), and a reference beam in a holographic emulsion plate (14), serves as the holographic storage medium, (please see Figure 3) taught by Lesh as described for claims 1, 24 and 30 above have met all the limitations of the claims.

Lesh teaches that the photolithography mask has an information layer that is divided up into a plurality of data pages, (each "holes" on the mask serves as a data page), and these data pages are recorded parallel in the holographic recording medium. However Lesh does not teach explicitly that the data mask comprises a holographic recording medium. **Anderson et al** in the same field of endeavor teaches a data mask (130, Figure 2), in a data recording system wherein the data mask (130) includes *multiple individual holographic representations stored in a spaced-apart fashion in the ordered rows and column*, i.e. the data mask 130 is divided up into a plurality of data pages each being a holographic representation, (please see column 4, lines 53-72). The storage medium is therefore a holographic medium. It would then have been obvious to one skilled in the art to apply the teachings of the **Anderson et al** to modify the data mask of Lesh to make it formed by a plurality data pages of *holographic*

Art Unit: 2872

representations and to make the data mask comprises a holographic recording medium, (as a master hologram), for the benefit of using alternative way of presenting the information intended for recording the holograms and for the benefit of providing a way to more accurately present the data information in the recording process, since holograms in general has an accurate beam selectivity when replaying to obtain the stored holographic information. With regard to the features concerning a plurality of information layers, this feature is not clearly defined in the claims therefore cannot be examined with details. It is however implicitly true that one can form a *multiple* of information layers each is a storage medium (130) of Anderson et al with a plurality of holographic representations recorded in multiple data pages fashion.

With regard to claim 46, the feature concerning “read only” holographic storage medium is confusing since the medium is used explicitly for recording hologram. This feature therefore cannot be really examined.

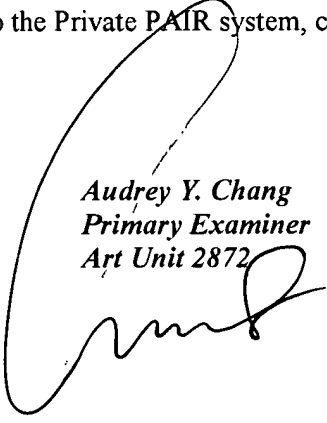
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2872

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Art Unit 2872*

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